

CALIFORNIA DIVISION OF MINES AND GEOLOGY

FAULT EVALUATION REPORT FER-110

SUPPLEMENT NO. 1

October 30, 1981

1. Fault.

Pleasanton fault

2. Location.

Diablo 7.5-minute quadrangle, Contra Costa County.

3. Reason for evaluating.

New information received in response to the issuance of Preliminary Review Map of Special Studies Zones Maps, Diablo quadrangle, July 1, 1981.

4. Additional references (see FER-110).

Contra Costa County Planning Department, 1981, Letter of Oct. 13, 1981 of A.A. Dehaesus to State Mining and Geology Board, 2 p.

Engco, Inc., 1981, Letter of Sept. 23, 1981 by W.B. Wigginton to Earl Hart, 2 p.

Hart, E.W., 1981a, Calaveras, Pleasanton and Sherburne Hills faults, Diablo quadrangle, California: California Division of Mines and Geology Fault Evaluation Report FER-110 (unpublished report on file at San Francisco District Office).

Hart, E.W., 1981b, Pleasanton and related faults, Dublin quadrangle vicinity: California Division of Mines and Geology Fault Evaluation Report FER-109 (unpublished report on file at San Francisco District Office).

Lindvall, Richter and Assoc., 1981, Letter of Sept. 21, 1981, by R.J. Proctor to D. Van Voorhis, 3 p.

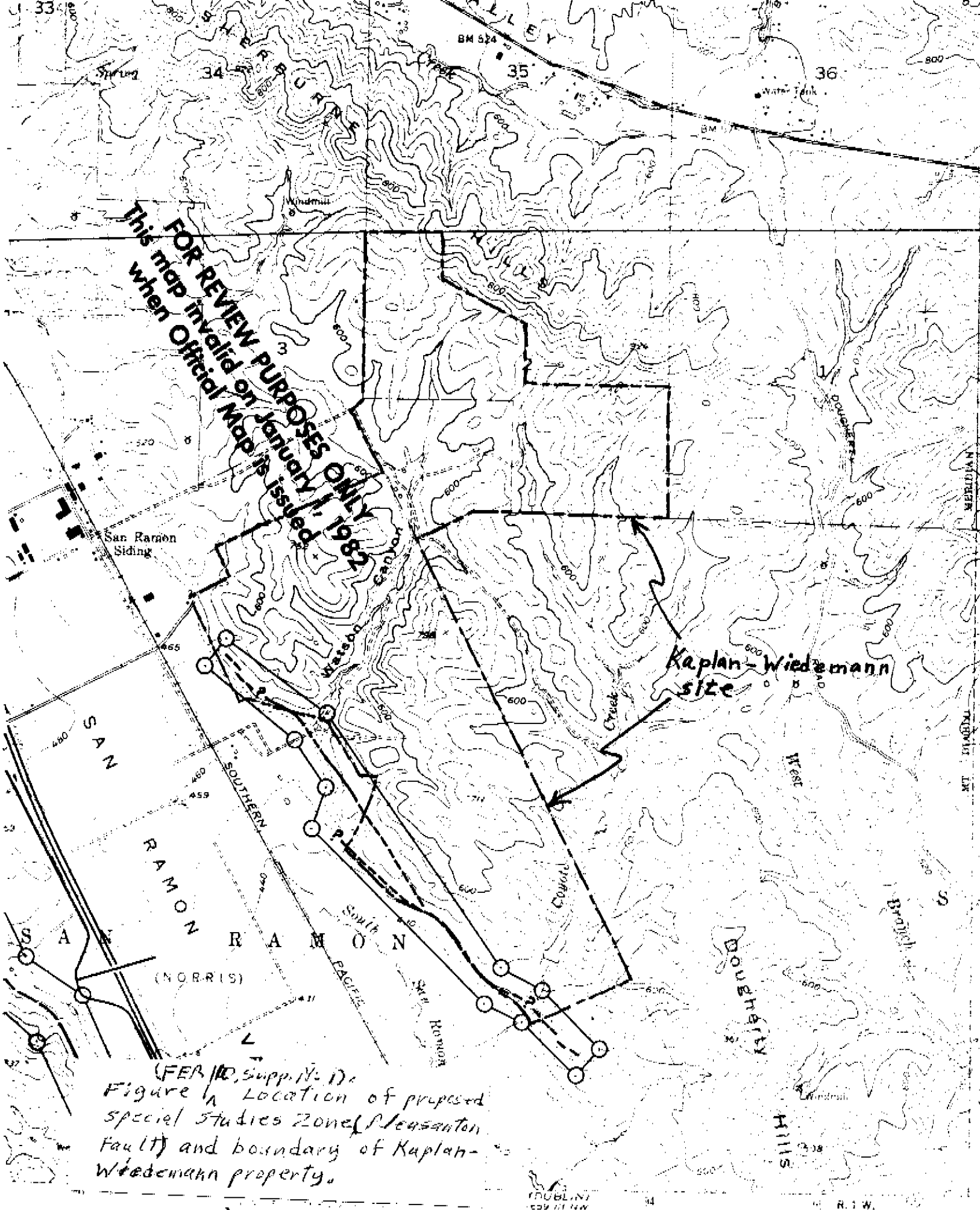
Terrasearch, Inc., 1981, Letter of July 24, 1981 Richard Rowland to Earl Hart, 3 p.

5. Summary of data.

The existence of significant new information on the Pleasanton fault has been brought to the attention of CDMG in letters by Terrasearch, Inc. (1981), Engeo, Inc. (1981), Lindvall, Richter and Assoc. (1981), and the County of Contra Costa Planning Dept. (1981). These letters review the proposed revised Special Studies Zones (SSZ's) shown on the Preliminary Review Maps of July 1, 1981, Dublin and Diablo quadrangles. The discussion herein applies mainly to the Pleasanton fault in the Diablo quadrangle, but also applies indirectly to the Dublin quadrangle. Information on the Pleasanton fault in the Diablo quadrangle is summarized by Hart (1981). His recommendation for zoning is based on the offset of soils and undated alluvium reported in three consulting reports by Berlogar-Long and Assoc. and Burkland and Assoc.

According to Terrasearch, Inc. (1981), evidence of the Pleasanton fault was found up-slope from the trace shown on the Diablo SSZ map. In addition, a "possibly potentially active fault" along the southwest flank of the Sherburne Hills in S 1/2 sec. 2, T. 2 S., R. 1 W. was reported. This work was based on "extensive trenching" for the Kaplan-Weidemann property (Figure 1). A telephone discussion with Richard Rowland of Terrasearch on October 22, 1981 revealed that the geologic report (Phase II) prepared for the Kaplan-Weidemann site was not available for review and the site was under additional investigation by others. Rowland did amplify on his recent letter, however. He stated that "several shears on the site were considered to be potentially active based on the presence of bedrock shears that appeared to extend upward into the soil" and to offset the soil locally. He indicated that the shears were somewhat distributive

FOR REVIEW PURPOSES ONLY
This map invalid on January 1, 1982
when Official Map is issued



(FER 10, Supp. N-1)
Figure 1. Location of proposed special studies zone (Pleasanton Fault) and boundary of Kaplan-Wiedemann property.

and partly lay outside the proposed SSZ, extending from north of Watson Canyon to Coyote Creek on the south. As result of their findings, Terrasearch (1981) recommended more extensive zoning than was proposed on the recent Preliminary Review Map of Revised SSZ's. Expanded zoning also was recommended by Terrasearch (1981) for the Pleasanton fault elsewhere in the Diablo and Dublin quadrangles, based on similar data obtained at other sites. These data have already been discussed and considered by Hart (1981a and b).

Engeo, Inc., made an additional investigation of the potential for faulting at the Kaplan-Wiedemann site, which included limited trenching and a review of the earlier Terrasearch work (W. Wigginton, p. c., 10/22/81). A report was prepared and submitted to the developer, but it has not been released. According to Wigginton (p.c.), Engeo excavated two short trenches adjacent to Terrasearch trenches, where faulted soils were reported, but faulted soils were not observed by Engeo. However, minor bedrock faults were confirmed. It is Wigginton's belief that bedrock faults are widely distributed in the Dougherty and Sherburne Hills and that these faults largely parallel the bedding. It's his opinion that the minor soil offsets ("steps") are due to differential slip along bedding as a result of folding, rock expansion/contraction, and possibly other non-fault causes. Wigginton has written (Engeo, 1981) that he fully concurs with the opinions of Lindvall, Richter, and Associates (1981), who was subsequently retained by the developer of the Kaplan-Wiedemann property to perform additional fault evaluations. The latter firm is scheduled to do extensive trenching of the site before the end of 1981.

Based on a review of the un-released Terrasearch report and other data pertinent to the Kaplan-Weidemann site, Lindvall, Richter and Associates (LRA) summarized their preliminary opinions in a recent letter (LRA, 1981). LRA states that aerial photos

do not reveal the existence of features suggestive of the Pleasanton fault. Additionally, LRA evaluated the trench logs made on and near the Kaplan-Wiedemann site and concluded that the "shears, slickensides and small [soil] offsets... should be expected in folded claystone bedrock." The firm also noted that sympathetic movement may have occurred on bedding planes and small shears during strong earthquakes on nearby faults. LRA pointed out that a "fault or shear in one trench does not appear in another on-line trench with a similar attitude or size" and concluded that there was no convincing evidence of a through-going fault at the Kaplan-Wiedemann site.

As a result of the firm's analysis, LRA concludes that CDMG's identification of the Pleasanton fault at the Kaplan-Wiedemann site to be "highly questionable" and does not meet CDMG's zoning criterion of "well-defined". LRA further concludes that CDMG would be justified in removing the Pleasanton fault and SSZ from the Official SSZ Map of the Diablo quadrangle.

A letter from Contra Costa County (CCC, 1981) indicates that Todd Nelson, Senior Planning Geologist, has made an "extensive review of the geologic reports" and held discussions with many geologists regarding the Pleasanton fault. The County recognizes that folding and possible faulting may result in small incremental offsets at the surface as a result of intraformational slippage. However, CCC believes that such features are not readily detected except through very careful trench logging. The County states that the "modes of surface deformation... are not consistent with simple fault depictions" and that the surface hazards "may be spread over an unusually broad area." As a result, CCC recommends that the State delete the Pleasanton fault from the Special Studies Zones Maps of the

Diablo and Dublin quadrangles. These conclusions were verified by Todd Nelson (p.c., 10/20/81).

6. Discussions and conclusions.

It is apparent from the above that the segment of the Pleasanton fault proposed for revised zoning in the Diablo quadrangle may not be as well-defined as previously believed. As indicated by Hart (1981a), the geomorphic evidence between Watson Canyon and Coyote Creek was only "faintly suggestive of recent faulting" and the proposed zoning was largely based on trench data reported by others. The trench data were sufficiently contradictory and inconclusive (Hart, Table I, Fig. 3 and 4) that it was not clear ^{if} ~~th~~ at the zoning criterion of "well-defined" was met. Because building setback zones were established by the County of Contra Costa based on the trench data and because the Pleasanton fault has previously been zoned in 1974, the recommendation was made to establish a revised SSZ of restricted size.

The indicated minor recent faulting east of the proposed zone in the Dougherty Hills seems to confirm this writer's *opinion* (Hart, 1981a, p. 20, 24) that ^{recent} ~~A~~ faulting in the Dougherty Hills is minor, distributive, non-systematic, and discontinuous. In any case, it now appears that nowhere in the Dougherty Hills is there evidence of a well-defined recent fault. This conclusion is supported by interpretations of Todd Nelson ~~Senior~~ Planning Geologist (CCC, 1981) and others who have reviewed the data (see above). According to Nelson, the recently active minor, discontinuous ^u ~~A~~ faults noted in the Dougherty and Sherburne Hills "may be spread over an unusually broad area" and would be detected only "through very careful trench-logging." Indeed, trenches would need to be spaced

very close together. And if the recent soil offsets are due largely to a combination^{of} folding and complex downhill movements (landsliding, rock creep, lateral-spreading of ridges), then even trenching may be ineffective.

7. Recommendations.

a) Do not zone any part of the inferred Pleasanton fault as it does not meet the criterion of "well-defined" (see Hart, 1980). Moreover, there is considerable question that such a through-going fault exists or that the minor recent movements attributed to it are in fact due to Holocene faulting^A. b) Consider deleting the short SSZ for the Pleasanton fault at Old Ranch Road for the same reasons given herein (Hart, 1981b).

8. Report prepared by:

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